



# ACHIEVE: ready for testing and deployment

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**CETO**  
WAVE ENERGY IRELAND



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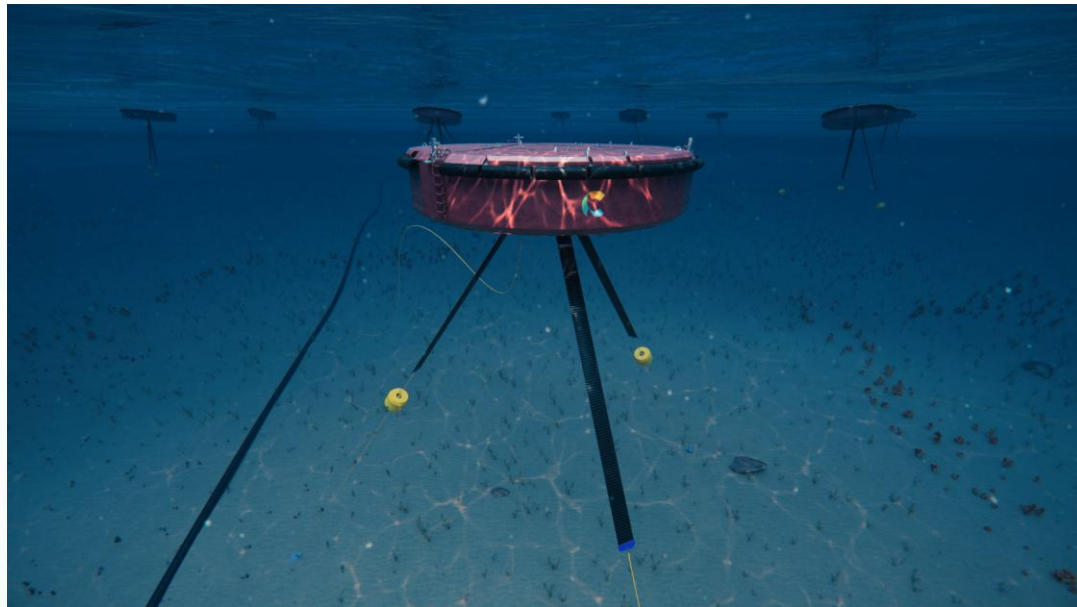
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# CETO technology – Key Features

- ✓ Point Absorber
- ✓ Axisymmetric
- ✓ Submerged
- ✓ Multi-moored
- ✓ Scalable
- ✓ Adapts to various depths
- ✓ Optimised for lowest LCOE
- ✓ Survivability














## State of play: Phase 3 target outcomes

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- Complete **detailed design** compliant with Phase 3 deployment
- Obtain licensing and comply with **HSE** requirement
- Manage successfully **manufacturing and assembly** of WEC
- Demonstrate effectiveness of **operational strategies**
- Produce energy continuously and demonstrate **reliability**
- Demonstrate effectiveness of **survival strategies**
- Complete **Stage 3** of IEA Framework
- Unlock learning and confidence for **commercial roll-out**

# ACHIEVE Project – Phase 3 – Organisation Breakdown Structure

			WP 1 Project Management	WP2 Detailed Design	WP3 PTO Testing	WP4 Procurement & Fabrication	WP5 Assembly & Final Testing	WP6 Offshore Preparation	WP7 Offshore Operations	WP8 Commercial Exploitation	WP9 Certification Pathway
Consortium	Steering Committee Members		Leading	Leading	Leading	Leading	Leading	Leading	Leading	Leading	Supporting
			Supporting	Supporting		Supporting		Supporting			
Subcontractors	Design and Components			Supporting		Supporting	Supporting	Supporting	Supporting		
				Supporting		Supporting					
				Supporting		Supporting			Supporting		
				Supporting		Supporting	Supporting				
	PTO Testing				Supporting						
	Techno-Economic									Supporting	
	Certification			Supporting							Leading

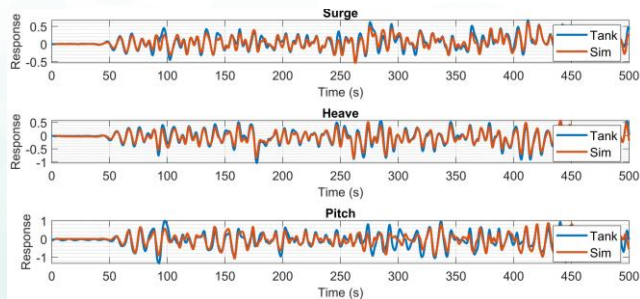
\* This table shows the Work Packages that each partner is leading or supporting and includes lead personnel names. There are also key interlinkages between the Work Packages that will be managed by CETO Wave Energy Ireland.



# State of play: Phase 3 progress

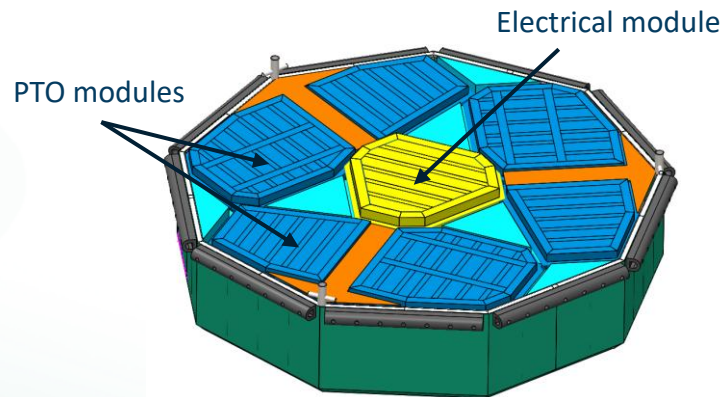
## Modelling:

- Quasi-nonlinear numerical model formulated using WEC-Sim
- Non-linear hydrodynamics, tensioner behaviour, generator, advanced controllers ...
- Validated against wave tank runs



## BA design:

- Ongoing design
- Buoyancy targets achieved
- Pressure loading checked
- Extreme loading considered
- Assembly process defined



# State of play: Phase 3 progress

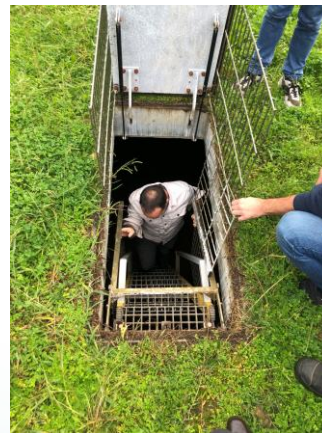
## PTO system:

- Drivetrain arrangement fully defined
- Generator, gearbox selected and procured (on production phase)
- Clutch-brake designed (on production phase)
- Tensioner System
- SAS, drums, shaft and other drivetrain elements on detail design phase



## Electrical system:

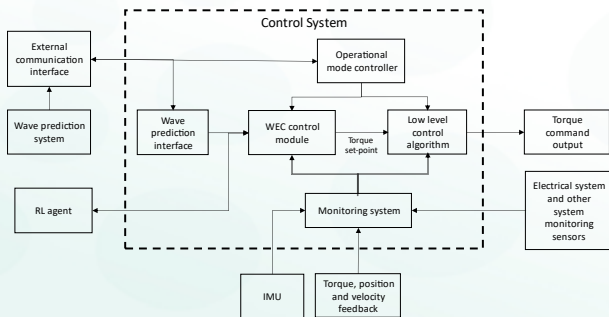
- Design: review nearing completion
- Procurement: on-going
  - Selected transformer solution
  - Power electronics converters already procured
  - Batteries procured



# State of play: Phase 3 progress

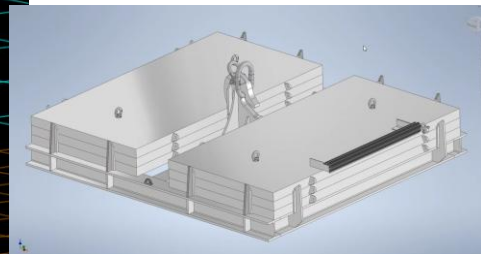
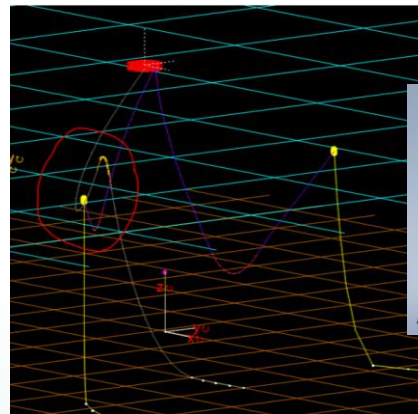
## Control system:

- Detailed design in progress
  - Electrical interfaces
  - Multi-line drawings
  - Instrumentation selection
  - Software documentation
- Software implementation (logging, alarms)
- Control system architecture defined
  - PLCs and servers ordered
  - Networking devices selected



## Moorings & foundations:

- Detailed design complete for primary mooring foundations
- Design of the MC completed. Now focusing on procurement & manufacturing
- Secondary mooring design being finalized
- Working with BA designer for Q-connect integration





# State of play: Phase 3 progress

## External engagement, comms & dissemination

- ICOE 2024 Melbourne: heavy Carnegie Presence with Keynote presentation, 8+ staff presentations, exhibition stall
- Australian Ambassador to Spain: Meeting with Spanish team at Saitec
- Carnegie Spain team stall at OREAGUA night of researchers event in Bilbao: community event
- Presented at other relevant events:
  - Foro Sectorial by Basque Wave Energy Cluster
  - JRL-ORE X Marine Energy Conference 2024
  - HPE GreenLake Day Madrid 2024





# Deployment

- Successfully passed Authorisation to Proceed (ATP) in March 2024
- Going through consenting with BiMEP and national authorities
- Targeting summer 2025 window for deployment



Be part of the innovation that will unlock the power of the world's oceans



Thank you

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